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10/602,462	06/23/2003	Daniel Wayne Bedell	HIT1P006/HSJ9-2003-0045US	2629

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EXAMINER
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CHEN, TIANJIE

ART UNIT	PAPER NUMBER
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2627

DATE MAILED: 05/31/2006

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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/602,462  
Filing Date: June 23, 2003  
Appellant(s): BEDELL ET AL.

**MAILED**

**MAY 31 2006**

**Technology Center 2600**

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Dominic M Kotab  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 03/20/2006 appealing from the Office  
action mailed 10/03/2005.

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**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

2001/0013991

Rose et al

8-2001

6,570,739

Hsiao et al

5-2003

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

*Claim Rejections - 35 USC § 102*

1. Claims 25-34, 36 and 37 are rejected under 35 U.S.C. 102(b) as being anticipated by Rose et al (US 2001/0013991).

Claim 25, Rose et al shows a magnetic head in Fig. 3 as shown in next page, including: an insulating layer 70([0040] line 1); a photoresist layer 82 ([0046] line 1) positioned adjacent the insulating layer for defining at least one channel; and a coil structure 20b ([0041] line 1) defined by a conductive material situated in the channel; wherein a profile of the channel includes a first segment (se Fig. 3 shown in next page) defining a first angle and a second segment continuous with the first segment, the second segment defining a second angle being different than the first angle.

Claim 26, Rose et al further shows that the first segment of the channel is positioned below the second segment of the channel.

Claim 27, Rose et al further shows that the first segment defines a beveled angle (Fig. 3 shown in next page).

Claim 28, Rose et al further shows that the first segment defines an angle between 70 to 85 degrees.

Claim 29, Rose et al further shows that the second segment defines an angle that is substantially vertical.

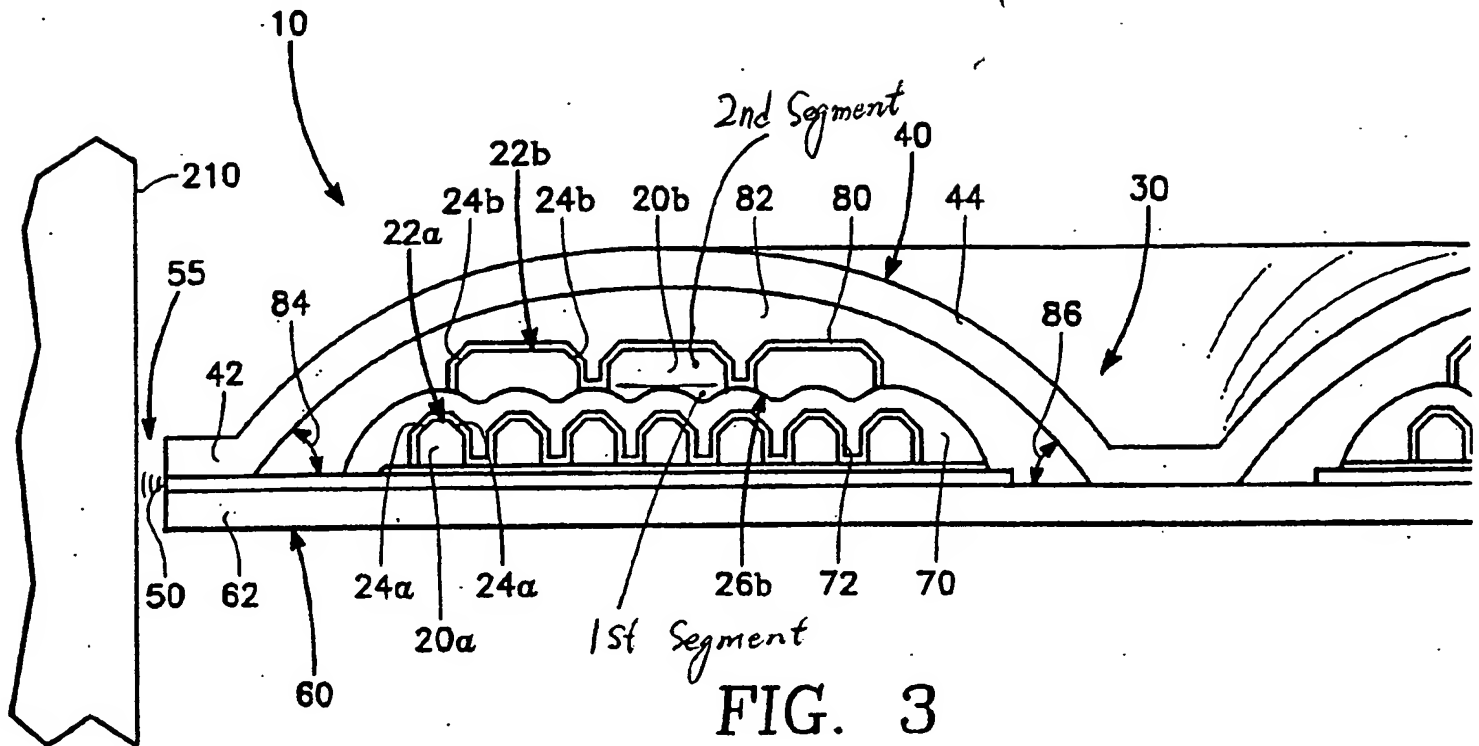


FIG. 3

Claim 30, Rose et al further shows that the second segment defines an angle between 80 to 90 degrees.

Claim 31, Rose et al further shows that the first segment defines an angle between 70-85 degrees.

Claim 32, Rose et al further shows a magnetic head.

A "product by process" claim is directed to the product per se, no matter how actually made, see *In re Hirao*, 190 USPQ 15 at 17 (footnote 3 CCPC, 5/27/76); *In re Brown*, 173 USPQ 685 (CCPA 5/18/72); *In re Luck*, 177 USPQ 523 (CCPA, 4/26/73); *In re Fessmann*, 180 USPQ 324 (CCPA, 1/10/74); *In re Thorpe*, 227 USPQ 964 (CAFC, 11/21/85). The patentability of the final product in a "product by process" claim must be determined by the product itself and not the actual process and an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. In claim 32, "the reactive ion etching includes

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H<sub>2</sub>/N<sub>2</sub>/ H<sub>2</sub>/CH<sub>3</sub>F/C<sub>2</sub>H<sub>4</sub> reducing chemistry” is a process related limitation, which gains no weight in determining patentability.

Claim 33, Rose et al shows that the photoresist is hard-baked ([0046] lines 1).

The process related limitation gains no weight in determining patentability for the same reason described above.

Claim 34, Rose et al shows that the conductive material includes Cu ([0017]).

Claim 36, Rose shows a magnetic head.

The process related limitation gains no weight in determining patentability for the same reason described above.

Claim 37, Rose et al shows a disk drive system in Fig. 1, including: a magnetic recording disk 210; a magnetic head 220, as described above, which includes: an insulating layer, a photoresist layer positioned adjacent the insulating layer for defining one channel, and a coil structure defined by a conductive situated in the channel, wherein the channel and coil structure include a first segment defining a first angle and a second segment defining a second angle, the first and second segments being continuous; an actuator 230 for moving the magnetic head across the magnetic recording disk so the magnetic head may access different regions of the magnetic recording disk; and a controller electrically coupled to the magnetic head.

*Claim Rejections - 35 USC § 103*

2. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rose et al in view of Hsiao et al (US 6,570,739).

Rose et al does not show that the aspect ration of the channel and coil structure is at least 2.5.

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Hsiao et al shows a magnetic head wherein that the aspect ration of the channel and coil structure is at least 2.5 (column 5, lines 37-39).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to set the aspect ration of the channel and coil structure is at least 2.5 as taught by Hsiao et al. the rationale is as follows: Hsiao et al teaches that by setting high aspect ratio for the coil, the rise time can be shortened, the data writing rate can be increased (Column 1, lines 36-45). One of ordinary skill in the art would have been motivated by Hsiao et al's teaching to set the aspect ration to increase data writing rate.

**(10) Response to Argument**

**Issue #1:**

**Group #1: claims 25-30, 32-34, 36, and 37**

- Applicant argues: "looking into the marked-up version of Rose's Fig. 3, above, the first segment marked by examiner is not defined by the photoresist layer 82, but rather is defined by insulating layer 70."

Examiner's position: Claim 1 only recites: "a profile of the channel includes a first segment," which does not require the first segment is defined by a photoresist.

Communication in the Advisory Action should be considered being off record and should not be considered in this Appeal process.

- Applicant further argues: "Examiner recited feature in rose et al is an "encapsulation" rather than a "channel."

Examiner's position: In Rose et al the channel (the space marked with 20b in Fig. 3) is covered by a photoresist 82. In Applicant's embodiment shown

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in Fig. 4E the channel (the space mark "Cu" in it) is filled with Cu for forming a coil. Each channel with Cu in it is a turn of the coil. The turns should be electrically isolated each other to avoid shunting of the current. Or insulating, in the space above the coil having "412" in it there is inherently filled with insulating material. It clearly shows that the channel in Applicant's embodiment is an "encapsulation" just like the one in Rose et al. Examiner see no reason that Applicant's "encapsulation" is a channel and Rose et al's "encapsulation" cannot be a channel.

To support the above mentioned inherency, a magnetic head with almost the same coil structure from a patent owned by same assignee of this application is shown below: wherein the channel 29, which exactly corresponds Applicant's channel is an encapsulation in a final product.

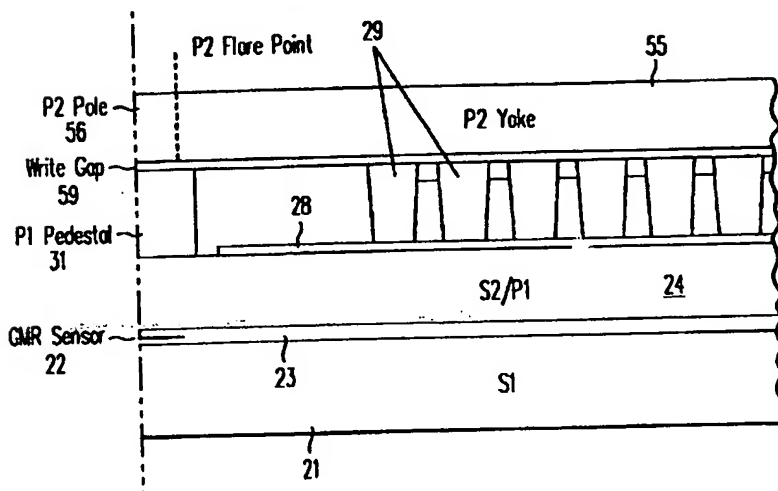
(12) **United States Patent**  
**Emilio Santini**

(10) Patent No.: **US 6,757,134 B2**  
 (45) Date of Patent: **Jun. 29, 2004**

(73) Assignee: **Hitachi Global Storage Technologies**  
**Netherlands B.V., Amsterdam (NL)**

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The P2 pole tip 56 confronts the P1 pedestal 31 at the write gap 59, which is at the air-bearing surface ("ABS"). Metal coil loops 29 (typically of copper) are deposited on a layer of alumina 28 on top of the P1/S2 24. The head has





- Applicant further argues: "Claim 25, also requires that the segments of the channel and their respective angles are defined by the photoresist. This feature is not shown in rose."

Examiner's position: Claim 25 does not recite and require "the segments of the channel and their respective angles are defined by the photoresist " In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the features recited above) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

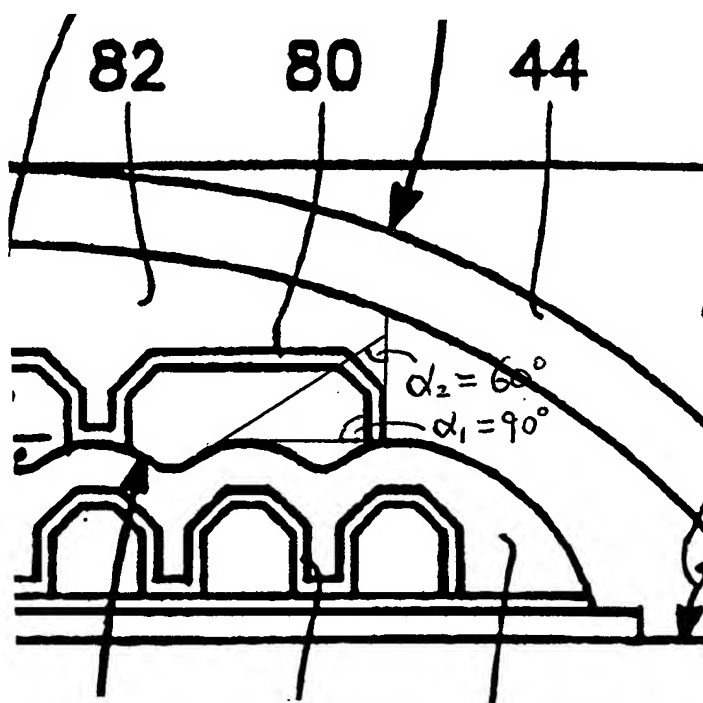
**Group #2: Claim 31**

- Applicant argues: "the first segment identified by Examiner cannot be between 70 and 85 degrees."

Examiner's position: Applicant recites in claim 31: "the first segment defines an angle between 70 and 85 degrees." Applicant does not specify the way of defining the angle. Since the first segment has a curved profile at bottom, a reasonable and commonly used way to define an angle is: an angle formed by a tangential and the vertical wall as shown in a figure below. Since the bottom profile of first segment is curved, the angle varies as the tangential moves along the curve. Therefore, the first segment defines an angle, which

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varies in a range, as shown in the figure below. It can vary, at least, in a range from 60 to 90 degrees, which covers the range of 70-85 degrees.

**Issue #2:****Group #1: Claim 35**

- Applicant argues: “the motivation for adding high aspect ratio coils as recited by Examiner is already provided by upper conductor 22b as stated in Rose [0045], and so there is no motivation to replace rose’s upper conductor 22b with Hsiao’s coil.”

Examiner’s position: Rose et al sees the importance of improving the rise time and has done something for improving rise time. Hsiao et al suggests a way, which can further improve rise time. Obviously, one of ordinary skill in the

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art will be motivated by both Rose et al and Hsiao et al's teaching to apply Hsiao et al's method for further improving rise time. This is a two-way motivation, which is stronger than one-way motivation. The Hsiao et al's teaching does not teach away from Rose et al's design. Rose et al teaches that the upper conductor is wider than the lower conductor. Hsiao et al teaches that the aspect ratio should be kept in the range of 3.2 to 16 (Column 5, lines 37-39). So one of ordinary skill in the art would have been motivated to make the upper conductor in Rose et al's device have an aspect ratio of 3.2 and keep the upper conductor wider than the lower one. The lower conductor would have a higher aspect ratio, which can be still in the range of 3.2-16 as taught by Hsiao et al.

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

***For the above reasons, it is believed that the rejections should be sustained.***

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Respectfully submitted,

  
**TIANJIE CHEN**  
**PRIMARY EXAMINER**

Conference held on 05/24/2006.

Conferees:

Hoa Thi Nguyen (Supervisory Patent Examiner)

Wayne Young (Supervisory Patent Examiner)

Brain Miller (primary Patent Examiner) /Brian E. Miller/

Tianjie Chen (Primary Patent Examiner)

